

WHAT IS CLAIMED IS:

- 1 1. A method for static load balancing, comprising:
2 for each data path in a network adapter team, computing a load balancing value;
3 determining a maximum value of the computed load balancing values; and
4 selecting a data path with the maximum value for use in routing data.

- 1 2. The method of claim 1, further comprising:
2 receiving a list of the data paths in the network adapter team, a total number of
3 bytes transferred by the network adapter team, a load balancing share of each data path,
4 and a number of bytes transferred on each data path.

- 1 3. The method of claim 2, wherein computing the load balancing value for a
2 data path further comprises:
3 dividing the total number of bytes by the number of bytes transferred on the data
4 path to generate a first value; and
5 multiplying the first value by the load balancing share of the data path.

- 1 4. The method of claim 2, wherein the load balancing share is provided by a
2 user.

- 1 5. A method for dynamic load balancing, comprising:
2 computing an actual load balancing share for each data path in a network adapter
3 team; and
4 for each data path,
5 determining whether a load balancing share for the data path is less than
6 the actual load balancing share for the data path; and
7 when the load balancing share is less than the actual load balancing share,
8 adjusting the load balancing share of the data path.

- 1 6. The method of claim 5, wherein adjusting the load balancing share further
2 comprises:

3 determining whether a difference between the load balancing share and the actual
4 load balancing share is less than a change threshold; and
5 when the difference between the load balancing share and the actual load
6 balancing share is less than the change threshold,
7 reducing the load balancing share of the data path; and
8 increasing the load balancing share of another data path.

1 7. The method of claim 6, wherein the load balancing share of the data path
2 in the network adapter team with a lowest difference load balancing value is increased,
3 and wherein, if multiple data paths have the lowest difference load balancing value, a
4 data path from the multiple data paths with a highest actual load balancing share is
5 increased.

1 8. The method of claim 5, further comprising:
2 computing a difference load balancing value for each data path in the network
3 adapter team.

1 9. The method of claim 8, wherein the actual load balancing share and the
2 difference load balancing value are computed when a timer fires.

1 10. The method of claim 5, further comprising:
2 receiving a timer interval value, a change threshold value, and a load balancing
3 change percent value.

1 11. The method of claim 5, further comprising:
2 receiving a list of data paths in the network adapter team, a total number of bytes
3 transferred by the network adapter team in a last time frame, a load balancing share of
4 each data path in the last time frame, and a number of bytes transferred on each data path
5 in the last time frame.

1 12. A method for failover processing, comprising:

2 determining whether a command may be routed through a first network adapter;
3 routing the command through the first network adapter in response to determining
4 that the command may be routed through the first network adapter; and
5 routing the command through a second network adapter in response to
6 determining that the command may not be routed through the first network adapter.

1 13. The method of claim 12, wherein the determination of whether a
2 command may be routed through a first network adapter determines whether an
3 indication that the first network adapter failed was received.

1 14. The method of claim 12, wherein routing the command further comprises:
2 forwarding the command to a low level driver with an indication of the selected
3 network adapter.

1 15. The method of claim 12, further comprising:
2 performing load balancing between the first network adapter and the second
3 network adapter when both network adapters are available.

1 16. A system for static load balancing, comprising:
2 multiple data paths forming a network adapter team; and
3 circuitry, in a load balancing component that is coupled to a bus, operable to:
4 for each data path in a network adapter team, compute a load balancing
5 value;
6 determine a maximum value of the computed load balancing values; and
7 select a data path with the maximum value for use in routing data.

1 17. The system of claim 16, wherein the circuitry is operable to:
2 receive a list of the data paths in the network adapter team, a total number of
3 bytes transferred by the network adapter team, a load balancing share of each data path,
4 and a number of bytes transferred on each data path.

1 18. The system of claim 17, wherein the circuitry operable to compute the
2 load balancing value for a data path is operable to:
3 divide the total number of bytes by the number of bytes transferred on the data
4 path to generate a first value; and
5 multiply the first value by the load balancing share of the data path.

1 19. The system of claim 17, wherein the load balancing share is provided by a
2 user.

1 20. A system for dynamic load balancing, comprising:
2 multiple data paths forming a network adapter team; and
3 circuitry, in a load balancing component that is coupled to a bus, operable to:
4 compute an actual load balancing share for each data path in a network
5 adapter team; and
6 for each data path,
7 determine whether a load balancing share for the data path is less
8 than the actual load balancing share for the data path; and
9 when the load balancing share is less than the actual load balancing
10 share, adjust the load balancing share of the data path.

1 21. The system of claim 20, wherein the circuitry operable to adjust the load
2 balancing share is operable to:
3 determine whether a difference between the load balancing share and the actual
4 load balancing share is less than a change threshold; and
5 when the difference between the load balancing share and the actual load
6 balancing share is less than the change threshold,
7 reduce the load balancing share of the data path; and
8 increase the load balancing share of another data path.

1 22. The system of claim 21, wherein the load balancing share of the data path
2 in the network adapter team with a lowest difference load balancing value is increased,

3 and wherein, if multiple data paths have the lowest difference load balancing value, a
4 data path from the multiple data paths with a highest actual load balancing share is
5 increased.

1 23. The system of claim 20, wherein the circuitry is operable to:
2 compute a difference load balancing value for each data path in the network
3 adapter team.

1 24. The system of claim 23, wherein the actual load balancing share and the
2 difference load balancing value are computed when a timer fires.

1 25. The system of claim 20, wherein the circuitry is operable to:
2 receive a timer interval value, a change threshold value, and a load balancing
3 change percent value.

1 26. The system of claim 20, wherein the circuitry is operable to:
2 receive a list of data paths in the network adapter team, a total number of bytes
3 transferred by the network adapter team in a last time frame, a load balancing share of
4 each data path in the last time frame, and a number of bytes transferred on each data path
5 in the last time frame.

1 27. A system for failover processing, comprising:
2 a first network adapter;
3 a second network adapter; and
4 circuitry, in a failover component coupled to a bus, operable to:
5 determine whether a command may be routed through a first network
6 adapter;
7 route the command through the first network adapter in response to
8 determining that the command may be routed through the first network adapter; and
9 route the command through a second network adapter in response to
10 determining that the command may not be routed through the first network adapter.

1 28. The system of claim 27, wherein the circuitry operable to determine
2 whether the command may be routed through the first network adapter is operable to
3 determine whether an indication that the first network adapter failed was received.

1 29. The system of claim 27, wherein the circuitry to route the command is
2 operable to:
3 forward the command to a low level driver with an indication of the selected
4 network adapter.

1 30. The system of claim 27, wherein the circuitry is operable to:
2 perform load balancing between the first network adapter and the second network
3 adapter when both network adapters are available.

1 31. An article of manufacture for static load balancing, wherein the article of
2 manufacture is operable to:
3 for each data path in a network adapter team, compute a load balancing value;
4 determine a maximum value of the computed load balancing values; and
5 select a data path with the maximum value for use in routing data.

1 32. The article of manufacture of claim 31, wherein the article of manufacture
2 is operable to:
3 receive a list of the data paths in the network adapter team, a total number of
4 bytes transferred by the network adapter team, a load balancing share of each data path,
5 and a number of bytes transferred on each data path.

1 33. The article of manufacture of claim 32, wherein the article of manufacture
2 operable to compute the load balancing value for a data path is operable to:
3 divide the total number of bytes by the number of bytes transferred on the data
4 path to generate a first value; and
5 multiply the first value by the load balancing share of the data path.

1 34. The article of manufacture of claim 32, wherein the load balancing share
2 is provided by a user.

1 35. An article of manufacture for dynamic load balancing, wherein the article
2 of manufacture is operable to:
3 compute an actual load balancing share for each data path in a network adapter
4 team; and
5 for each data path,
6 determine whether a load balancing share for the data path is less than the
7 actual load balancing share for the data path; and
8 when the load balancing share is less than the actual load balancing share,
9 adjust the load balancing share of the data path.

1 36. The article of manufacture of claim 35, wherein the article of manufacture
2 operable to adjust the load balancing share is operable to:
3 determine whether a difference between the load balancing share and the actual
4 load balancing share is less than a change threshold; and
5 when the difference between the load balancing share and the actual load
6 balancing share is less than the change threshold,
7 reduce the load balancing share of the data path; and
8 increase the load balancing share of another data path.

1 37. The article of manufacture of claim 36, wherein the load balancing share
2 of the data path in the network adapter team with a lowest difference load balancing
3 value is increased, and wherein, if multiple data paths have the lowest difference load
4 balancing value, a data path from the multiple data paths with a highest actual load
5 balancing share is increased.

1 38. The article of manufacture of claim 35, wherein the article of manufacture
2 is operable to:

3 compute a difference load balancing value for each data path in the network
4 adapter team.

1 39. The article of manufacture of claim 38, wherein the actual load balancing
2 share and the difference load balancing value are computed when a timer fires.

1 40. The article of manufacture of claim 35, wherein the article of manufacture
2 is operable to:
3 receive a timer interval value, a change threshold value, and a load balancing
4 change percent value.

1 41. The article of manufacture of claim 35, wherein the article of manufacture
2 is operable to:
3 receive a list of data paths in the network adapter team, a total number of bytes
4 transferred by the network adapter team in a last time frame, a load balancing share of
5 each data path in the last time frame, and a number of bytes transferred on each data path
6 in the last time frame.

1 42. An article of manufacture for failover processing, wherein the article of
2 manufacture is operable to:
3 determine whether a command may be routed through a first network adapter;
4 route the command through the first network adapter in response to determining
5 that the command may be routed through the first network adapter; and
6 route the command through a second network adapter in response to determining
7 that the command may not be routed through the first network adapter.

1 43. The article of manufacture of claim 42, wherein the article of manufacture
2 operable to determine whether a command may be routed through a first network adapter
3 is operable to determine whether an indication that the first network adapter failed was
4 received.

1 44. The article of manufacture of claim 42, wherein the article of manufacture
2 operable to route the command is operable to:
3 forward the command to a low level driver with an indication of the selected
4 network adapter.

1 45. The article of manufacture of claim 42, wherein the article of manufacture
2 is operable to:
3 perform load balancing between the first network adapter and the second network
4 adapter when both network adapters are available.